Preface (2003)

The Primate Malarias was published in 1971 and summarized knowledge on different species of *Plasmodium* that develop in non-human primates. It has served as a foundation for subsequent investigations on these parasites, their primate hosts, and their mosquito vectors. The Division of Parasitic Diseases of the Centers for Disease Control and Prevention has made this electronic version available to the scientific community in hopes that it will stimulate and support continued interest in these parasites and their contribution to the understanding and control of malaria.

This electronic version was produced by James J. Sullivan, Gregory Noland, and Leanne Ward, Biology and Diagnostics Branch of the Division of Parasitic Diseases.

William E. Collins
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Atlanta, Ga.
March 2003

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THE PRIMATE MALARIAS

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Dedicated to

DR. DON EDGAR EYLES
4 September 1915 to 4 October 1963

and

to the inmates at the United States Penitentiary,
Atlanta, Georgia, who volunteered to accept
infection with human and simian malarias.

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Preface

THIS book is about the malaria parasites of Primates. It deals with the parasite as seen in the vertebrate host and in the mosquito with comments on each of these hosts as their life habits or geographical location may contribute to the biology of the plasmodium. The knowledge that primates have malaria is not new, but the fact that lower primates, especially the monkeys and apes, harbor malarias infective to man, and, which produce disease in him, is a relatively new concept and one of special significance in the light of worldwide programs of malaria eradication and control.

Because of the dramatic suddenness with which this concept burst upon the world community of malariologists, we have included a detailed account of the initial happenings and their ramifications during the next ten years.

The first section deals with the evolution of the Haemosporidia, historical review, ecology of the hosts, and life-cycle including relapse. In subsequent sections each species is dealt with separately, beginning with its discovery and taxonomy, the cycle in the peripheral blood, the sporogonic cycle, the cycle in the tissues, the course of the infection, host specificity, and immunity and antigenic relationships. Pathology, chemotherapy, and the clinical aspects of the disease process are considered outside the scope of this work except as they may have a direct bearing on the specific malaria under discussion.

In dealing with individual species, it is recognized that, at present, the key to their identification rests with the cycle in the blood. It is not unlikely, however, that in the hands of the zoologist, knowledge of the sporogonic cycle will contribute greatly to species identification. In support of this concept, we have included comparison studies, done under controlled conditions, which, in some situations confirm, and in others pose some doubt, as to taxonomic identities and species relationships. The cycle in the tissue, except in a broad sense, can contribute little in this regard because these stages fail to show different, distinct, and constant morphological characteristics which permit species identification. Blood smear preparations must be used in the routine identification of species in man and lower animals but the specialist may find it advantageous to turn to the cycle in the mosquito or, to examine the serologic relationships for absolute identification in closely related species.

The course of the infection in the normal vertebrate host is described and illustrated, followed by its manifestations in other hosts, man or lower primates, or vice versa, if data are available.

The portion dealing with host specificity treats that item in both the vertebrate and invertebrate hosts in order to cast light on distribution and host specificity. Likewise, the discussion of immunity and antigenic relationships is treated in the light of speciation.

The synonomy of the malaria species is discussed in the introductory portion of a given chapter but for the human malarias it is given in tabular form, too, directly preceding the text. In presenting the presently accepted zoological name of the vertebrate host, we have relied on the Handbook of Living Primates by Napier and

Napier, 1967. In cases where the synonomy seemed clouded, we accepted the name given in the Checklist of Palearctic and Indian Mammals by Ellerman and Morrison-Scott, 1951. For the correct synonomy of the mosquitoes we accepted A Synoptic Catalog of the Mosquitoes of the World by Stone, Knight, and Starcke, 1959.

The literature on human malaria and some of the simian malarias, too, is so vast that we elected to base this work on selected references considered to be the most interesting and relevant through 1969; in a few instances, because of the importance of the work, we have included work published in 1970. Most references have been seen by one of us and where that was not possible, the listed reference is followed by (NS) = not seen.

The colored plates are an important part of this work and in planning for them we decided on certain requirements which would have to be met in order for a plate to be included: (1) the material for the plate must be our own, (2) the smear preparations would be stained by one of us and under exactly the same conditions as to stain, time, and pH, and (3) all of the illustrations would be done by a single artist working under the direct supervision of either McWW or GRC.

Our greatest difficulty was in fulfilling the first requirement. It took us something over two years to obtain an infection of *Plasmodium reichenowi* and one of us (McWW) made a special trip to Borneo in order to get material for the *P. pitheci* plate. We were never able to obtain an animal infected with *P. rodhaini* or parasitized blood for infecting our own animal; as a consequence, there is no plate depicting this parasite. We had to relax our requirements in the case of the malarias of lemurs. The material for that plate is copied from the work of the original describers.

This work was started in early 1966 by the senior author and Dr. McWilson Warren while colleagues in the Laboratory of Parasite Chemotherapy at the National Institutes of Health in Bethesda, Maryland, and continued, with interruptions, during the three years the senior author was Professor of Pharmacology at the Louisiana State University Medical School, New Orleans, Louisiana and finished, with the collaboration of Drs. William E. Collins and Peter G. Contacos, at the Center for Disease Control, Atlanta, Georgia.

ATLANTA, GA.
December, 1970

G.R.C.
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Particular acknowledgement is made of important contributions to this monograph by Mrs. Gertrude Nicholson, Medical Illustrator, NIH, who painted the colored plates; by Mr. J. C. Skinner, Biologist, who prepared the charts and graphs; by Mrs. Nancy Herbon, formerly of the Louisiana State University staff, for valuable aid and, especially, for her diligence in locating many hard-to-find references; and to Mr. Clinton S. Smith, Biologist, for the unique photographs of the sporogonic and EE stages.

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